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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,206	06/09/2005	Vasanth Philomin	US020522	1781
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			EXAMINER RICE, ELISA M	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 11/28/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/538,206

Applicant(s)

PHILOMIN ET AL.

Examiner

Elisa M. Rice

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/9/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

Figure 2-4 are objected to as depicting a block diagram without "readily identifiable" descriptors of each block as required by 37 CFR 1.84(n) Rule 84(n) requires "labeled representation" of graphical symbols, such as blocks. In the case of figures 2-4, the blocks are not readily identifiable per se and therefore require the insertion of text that identifies the function of that block. That is, each vacant block should be provided with a corresponding label identifying its function or purpose. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office Action to avoid abandonment of the application.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one

figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified. Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin. A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application. If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings **MUST** be filed within the **THREE MONTH** shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may **NOT** be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

Specification

Regarding Specification pages 1 and 6, Examiner reminds Applicant to update "09/794,443" with a corresponding issued Patent Number if and when available.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim 23 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 23 defines "one or more programs" embodying functional descriptive material. However, the claim does not define a computer-readable medium or computer-readable memory and is thus non-statutory for that reason (i.e., "When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized" – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on "computer-readable medium" or equivalent; assuming the specification does NOT define the computer readable medium as a "signal", "carrier wave", or "transmission medium" which are deemed non-statutory (refer to "note" below). Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 7-8, 12-18, and 22-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Brunelli ("Face Recognition: Feature versus Templates").

Regarding claims 1 and 13, Brunelli discloses a method for classifying an object in image data, comprising the steps of: assigning said image data (Brunelli, Fig. 11) to a node in a neural network said node having an associated node image ("NN classifier", see footnote 5 on page 1047; first paragraph on page 1047) ; and applying a normalized cross correlation measure to compare said image data and said node image if said image data and said node image are obtained under non-uniform illumination (Brunelli, page 1043, "A. Normalization"; last two paragraphs of page 1046).

Regarding claims 2 and 14, Brunelli discloses the method of claim 1, wherein a classification value for said object is determined by said normalized cross correlation measure ("returning a vector of matching scores (one per feature) computed through

normalized cross correlation.", page 1047, second paragraph under "III. Template Matching Strategy").

Regarding claim 3 and 15, Brunelli discloses the method of claim 1, wherein a determination of whether an image is obtained under non-uniform illumination further comprises the steps of normalizing intensity values in said image, dividing said image into a number of regions ("I.sub.T is the patch of image I), computing the mean ($\langle I_{\text{sub.T.T}} \rangle$ which represents the pixel-by-pixel average product, second paragraph on page 1043 under "A. Normalization") and variance of said regions ("the standard deviation over the area", page 1043, second paragraph under "A. Normalization") and determining if said image is uniform based on said mean and variance values ("This normalization rescales the template and image energy distribution so that their average and variances match," second paragraph on page 1043 under "A. Normalization").

Regarding claim 4 and 16, Brunelli discloses the method of claim 1, Brunelli suggests but does not specifically state wherein said classification value associated with said node is assigned to said image data if both of said image data and said node image are obtained under uniform illumination (Brunelli, page 1043, "A. Normalization"; last two paragraphs of page 1046).

Regarding claim 5 and 17, Brunelli discloses the method of claim 1, wherein said node image is not accepted if only one of said image data and said node image are obtained

under uniform illumination (Brunelli, page 1043, "A. Normalization"; last two paragraphs of page 1046).

Regarding claim 7 and 18, Brunelli discloses the method of claim 1, wherein said node has an associated class label identifying a class to which the object corresponds to and a classification value indicating the probability with which the object belongs to the class. Each node in the hierarchy has an associated classification value that determines a probability that an object is a member of the class associated with the node.

Regarding claim 8, Brunelli does not disclose the method of claim 1, further comprising the step of outputting a class label based upon said normalized cross correlation measure ("The unknown person is then classified as the one giving the highest cumulative score.", page 1047, second paragraph under "III. Template Matching Strategy").

Regarding claim 12 and 22, Brunelli discloses the method of claim 1, wherein said neural network is a Bayesian-based neural network (page 1045, first paragraph under "C. Recognition Performance").

Regarding claim 23, Brunelli discloses an article of manufacture for classifying an object in image data, comprising: a machine readable medium containing one or more programs which when executed implement the steps of: assigning said image data to a node in a neural network, said node having an associated node image; and applying a

normalized cross correlation measure to compare said image data and said node image if said image data and said node image are obtained under non-uniform illumination (see rejection of claim 1; "computer recognition", abstract; "computer program", page 1042, first paragraph under "Geometric, Feature-Based Matching").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brunelli et al. ("Face Recognition: Feature versus Templates") and Doi et al. (US 5790690).

Regarding claim 6, Brunelli does not disclose the method of claim 1, wherein said applying step is only performed if said classification value does not satisfy a predefined threshold (Brunelli, "rejection threshold", page 1046, last paragraph). Brunelli states in the last paragraph of page 1046 that rejection as a result of the classification value exceeding the "rejection threshold" would "trigger the action of a different classifier or the use of a different recognition strategy." Brunelli does not specifically state applying a

normalized cross correlation measure to compare said image data and said node image if said classification value does not satisfy a predefined threshold, but leaves itself open to modification by stating that a "different classifier or the use of a different recognition strategy could be used" (Brunelli, last paragraph of page 1046).

Doi teaches carrying out said applying step of a normalized cross correlation measure for comparison only if said classification value does not satisfy a predefined threshold.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Brunelli to include the method of carrying out said applying step of a normalized cross correlation measure to compare said image data and said node image only if said classification value does not satisfy a predefined threshold as taught by by Doi "in order to prevent incorrect detection" (Doi, column 9, lines 13-14) while at the same time minimizing its use when not needed and thus minimizing what is "well known" to be "computationally expensive" processing (Brunelli, page 1043, fourth paragraph under "A. Normalization").

Claims 9-11, and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunelli et al. ("Face Recognition: Feature versus Templates") and Engel et al. (US 5761383).

Regarding claim 9 and 19, while Brunelli discloses the method of claim 1, Brunelli does not disclose wherein said neural network is a radial basis function network.

Engel teaches wherein said neural network is a radial basis function network (column 7, lines 48-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the radial basis function network in the invention of Brunelli as taught by Engel because it is well-known as "one of the several neural network models" known in the art (Engel, column 7, line 50)

Regarding claim 10 and 20, while Brunelli discloses the method of claim 1, Brunelli does not disclose wherein said neural network is a back propagation network.

Engel teaches wherein said neural network is a back propagation network (column 7, lines 48-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the back propagation network in the invention of Brunelli as taught by Engel because it is well-known as "one of the several neural network models" known in the art (Engel, column 7, line 50)

Regarding claim 11 and 21, while Brunelli discloses the method of claim 1, Brunelli does not disclose wherein said neural network is a multi-layered perceptron-based network.

Engel teaches wherein said neural network is a multi-layered perceptron-based network (column 7, lines 48-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the multi-layered perceptron-based network in the invention of Brunelli as taught by Engel because it is well-known as "one of the several neural network models" known in the art (Engel, column 7, line 50).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elisa M. Rice whose telephone number is (571)270-1582. The examiner can normally be reached on 8:00a.m.-5:30p.m. EST Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian P. Werner can be reached on (571)272-7401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Elisa Rice *ER*
Patent Examiner
2624

EMR

A handwritten signature in black ink, appearing to read 'BRIAN WERNER', enclosed within a large, irregular oval shape.

BRIAN WERNER
SUPERVISORY PATENT EXAMINER